<u>In the Claims</u>

1. (Cancelled

2. (Cancelled)

3. (Currently Amended)   A method of operating a transmitter, said method comprising:

    (1) being provided a statistical nature of ~~the~~ a channel and noise power;

    (2) determining a mean square error for each stream weight of a plurality of stream weights based on the statistical nature of the channel and the noise power;

    (3) determining a first stream weight of the plurality of stream weights having the largest mean square error;

    (4) increasing a power of the first stream weight;

    (5) decreasing a power of each stream weight of the plurality of stream weights excluding the first stream weight; and

    repeating steps (2) through (5) when all of the mean square errors of the plurality of stream weights are unequal.

4. (Cancelled)

5. (Original)   The method of claim 3, further comprising:

    establishing an increment,

    wherein an increasing of the power of the first stream weight is by a summation of the power and the increment.

6. (Cancelled)

7. (Cancelled)

8. (Cancelled)

9. (Cancelled)

10. (Currently Amended)   A method of operating a transmitter, said method comprising:

(1) initializing a first stream weight;

(2) establishing a resolution value, an initial value of ~~the~~ <u>a</u> increment, and a statistical nature of ~~the~~ <u>a</u> channel vector;

(3) determining a weighting of a plurality of stream weights excluding the first stream weight;

(4) determining a power variable;

(5) increasing the first stream weight by a product of the power variable and an increment;

(6) dividing the increment by a factor subsequent to increasing the first stream weight by a product of the power variable and the increment;

(7) determining a weighting of a plurality of stream weights excluding the first stream weight; and

repeating steps 4-7 when the increment is greater than the resolution value.

11. (Cancelled)
12. (Cancelled)
13. (Cancelled)
14. (Cancelled)

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15. (Currently Amended)   A transmitter, comprising:

a module operable to determine a first unequal weighting of a plurality of stream weights;

means for transmitting a plurality of transmission signals as a function of a plurality of data streams and the first unequal weighting of the plurality of streams weights;

wherein, to determine the first unequal weighting of the plurality of stream weights, said module is further operable to:

(1) determine a mean square error for each stream weight of a plurality of stream weights;

(2) determine a first stream weight of the plurality of stream weights having the largest mean square error;

(3) increase a power of the first stream weight; and

(4) decrease a power of each stream weight of the plurality of stream weights excluding the first stream weight and

repeat steps (1) through (4) when all of the mean square errors of the plurality of stream weights are unequal.

16. (Original) The transmitter of claim 15, wherein:

said module is operable to determine a second unequal weighting of the plurality of stream weights subsequent to the determination of the first unequal weighting for the plurality of stream weights; and

the plurality of transmission signals are transmitted as a function of the plurality of data streams and the second unequal weighting of the plurality of streams weights.

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17. (Cancelled)

18. (Original) The transmitter of claim 15, wherein, to determine the first unequal weighting of the plurality of stream weights, said module is further operable to:

establish a set of statistics corresponding to a channel vector.

19. (Cancelled)

20. (Original) The transmitter of claim 15, wherein, to determine the first unequal weighting of the plurality of stream weights, said module is further operable to:

establish an increment.

21. (Original) The transmitter of claim 20, wherein an increase in the power of the first stream weight is by a summation of the power and the increment.

22. (Cancelled)
23. (Cancelled)
24. (Cancelled)
25. (Cancelled)

26. (Original) The transmitter of claim 15, wherein, to determine a first unequal weighting of the plurality of stream weights, said module is further operable to:

initialize a first stream weight; and

increase the first stream weight by a product of a power variable and an increment.

27. (Cancelled)
28. (Cancelled)
29. (Cancelled)
30. (Cancelled)

31. (Currently Amended) A method of transmitting a plurality of data streams from a transmitter with multiple transmit antennas to a receiving unit, the method comprising the steps of:

weighting data streams by unequal power weightings to create a plurality of weighted data streams, wherein the unequal power weightings for each data stream is based on a statistical nature of ~~the~~ a channel vectors and a noise power; and

transmitting the plurality of weighted data streams to a receiving unit.

32. (Previously Presented) The method of claim 31 wherein the step of transmitting the plurality of weighted data streams involves transmitting the multiple data streams over multiple subcarriers.

33. (Previously Presented) The method of claim 31 wherein the statistical nature of the channel vectors comprises an averaging over at least one realization of a channel vector wherein the elements of the channel vector are random variables.

34 (Previously Presented) The method of claim 33 wherein the random variables are independent complex Gaussian random variables.

35. (Previously Presented) The method of claim 31 further comprising the steps of:

being provided the noise power; and

determining the unequal power weighting for each data stream.

36. (Previously Presented) The method of claim 35 wherein the step of determining the unequal power weighting for each data stream involves determining unequal power weightings so that a stream decoding order of successive cancellation performed at the receiving unit is predetermined.

37. (Previously Presented) The method of claim 35 wherein the step of determining the unequal power weighting for each data stream involves determining unequal power weightings so that a mean squared error of each data stream after successive cancellation at the receiving unit is substantially equal.

38. (Previously Presented) The method of claim 35 wherein the step of being provided the noise power involves the receiving unit feeding back the noise power.

39. (Previously Presented) The method of claim 35 wherein the step of determining the unequal power weighting is performed at the receiving unit and the receiving unit provides the unequal power weights to the transmitter.